A Landscape Assessment and Forest Management Framework for the Berkshire Ecoregions in Massachusetts

I. Introduction

Forests are much more than just trees. People rely on forests to provide building materials, heat for their homes, clean water and air, food and recreation, and other purposes vital to the health and economies of both individuals and societies. Further, they provide essential habitat for plant and animal species, retain genetic banks, protect rare/endangered species, and protect exemplary forest habitats. All of these values require a long-term perspective and stewardship of our forest ecosystems.

Increasingly, resource management agencies now make use of ecological classification systems, such as "ecoregions," for land management planning. Ecoregions are portions of extensive landscapes with similar geology, physiography, vegetation, climate, and land use history. Such an approach both allows for the development of landscape-level goals and objectives, and also provides a logical framework for coordinating forest management activities among various agencies, organizations and private forest landowners.

This document is the continuation of a significant statewide effort to complete ecological assessments and provide regional guidance for the sustainable management of forests within the 14 ecoregions of Massachusetts. This effort, which will be completed over the next several years, is being led by the Massachusetts Executive Office of Environmental Affairs (EOEA), with active participation by the three principle land management divisions: *the Department of Conservation and Recreation: Division of State Parks & Recreation(DSPR) and Division of Water Supply Protection (DWSP), and Department of Fish and Game: Division of Fisheries and Wildlife (DFW).* As an additional driver for the process, EOEA sought "green" certification of the sustainability of its forest management efforts, contracting with Scientific Certification Systems (SCS) to assess all state forestlands against the standards of the international Forest Stewardship Council (FSC). The certification process is detailed in a separate section of this assessment.

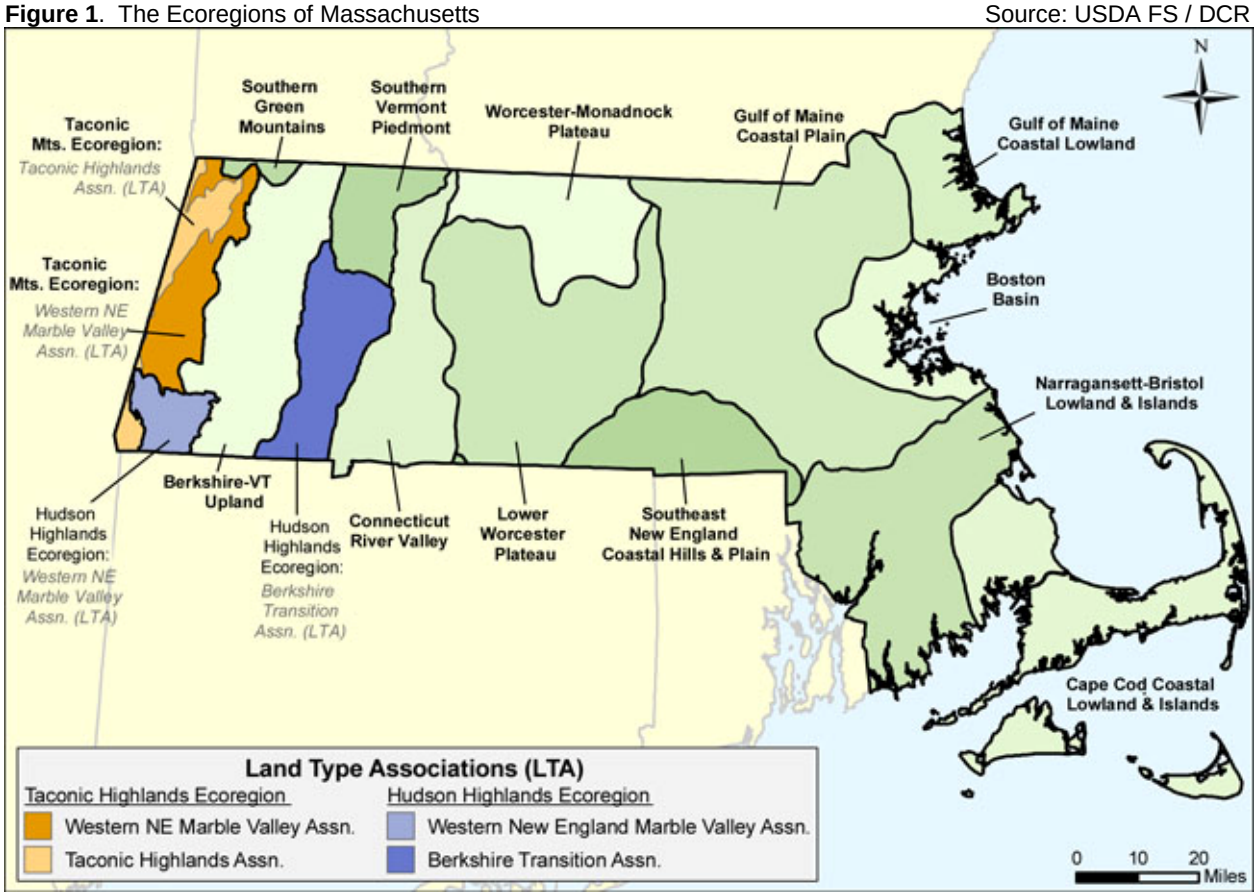
The goals of the ecoregion-based landscape assessment are to:

- Identify current forest management issues and goals for each ecoregion.
- Improve the management of state-owned forestland by more closely linking management actions with the ecological and social conditions and issues in the landscapes in which they occur.
- Coordinate the planning and implementation of forest management activities on state lands under the care and control of the two principal land management departments.
- Provide consistent opportunities for public input into the management of state-owned forestland in each ecoregion.
- Incorporate components into the forest management plans for state-owned properties, and other state programs, that offer incentives and technical assistance to private forest landowners regarding sound ecological stewardship of their forestland.
- Offer guidance to large non-state landowners (non-profit conservation organizations, forest industry, non-industrial private forestland owners, etc.) as to how their management practices can help address priority conservation issues in the ecoregion.

In delineating ecological regions for the state, staff from the two land-managing departments reviewed formats established by the Environmental Protection Agency (EPA) and the United States Forest Service (USFS). Both systems are based on assessments of the geological, hydrological and/or biological features of the Massachusetts landscape. The Forest Service system is part of a nested classification system that covers the entire United States. The EPA system only includes Massachusetts. The Nature Conservancy (TNC) has adapted the Forest Service ecological regions in its "forest matrix" analysis of the Northeastern United States.

The statewide ecoregion team[1] considered the benefits of these two systems, as well as the locations of the 500,000 acres of state-owned forestland relative to the two formats. For areas from the main stem of the Connecticut River and its' valley eastward to the coast, it was concluded that the Forest Service system provided the best "fit" with the ecological conditions that agency staff know to exist in that part of the state. For areas to the west, the EPA system includes the finer delineations that we felt were necessary for effective management planning there. Rather than create a new "hybrid" classification system, we presented our case to USFS representatives, who agreed to make some modifications to their system that accommodated our concerns. As a result, we are using the recently-revised USFS classification, which includes 14 ecoregions in Massachusetts (**Figure 1**). We also chose to subdivide two of these (i.e., the Taconic Mountains and the Hudson Highlands) where we felt landscape conditions were different enough within an ecoregion to warrant further subdivision for forest management/habitat planning purposes. Note that some additional minor modifications of these ecoregion boundaries might still be made in the future pending the results of a study currently being conducted by the University of Massachusetts, in conjunction with a contract with the USDA Forest Service[2].

Figure 1. The Ecoregions of Massachusetts Source: USDA FS / DCR



State-owned forestland includes state forests and parks, wildlife management areas, and watershed reservations. Owned in common by the citizens of Massachusetts, these properties are unusual in the consistency and duration of their ownership and in the mandated exclusion of most types of

[1] The "statewide ecoregion team" included: Robert O'Connor (EOEA); John Scanlon (DFG/DFW); James DiMaio, Michael Fleming, and Mike Barry (DCR/BFFCF); and Paul Lyons, Thomas Kyker-Snowman, Peter Church, and Bruce Spencer (DCR/DWSP).

[2] de la Cretaz, A., and M. Kelty. ("in preparation"). "Land Type Associations of the Massachusetts Portion of the Berkshire-Vermont Uplands" (working title).

development. Yet they are intimately linked to the dynamic landscape in which they exist. This landscape includes physical, biological, and ecological features and processes, as well as socio-economic components and their fluctuations over time.

The state properties, as significant as they may be, exist within a matrix of private land, much of which is also forested, and which is equally significant from a landscape ecology perspective. About 2.3 million acres (76%) of the forestland in Massachusetts is privately owned. As of May 3, 2005 nearly 360,000 acres of private land was enrolled in either Chapter 61 or Chapter 61A statewide. In the seventy (70) communities of the Berkshire Ecoregions alone, there are 163,440 acres (45% of the statewide total) of classified forest land managed under 3,195 forest management plans in these programs (see **Appendix I**). An additional 30,417 acres are protected through Conservation Restrictions or Agricultural Preservation Restrictions. They are held by state agencies, municipalities, and non-profits (see Section III. Conservation of Biological Diversity, **Table 5**).

Despite being separated by deeded property lines, the natural resource conditions between state-owned forestland and the greater landscapes in which they occur are complex, ranging from positive but barely perceptible (e.g., clean air and water) to profound and visible (e.g., the introduction of the hemlock woolly adelgid and the consequent loss of a broadly-valued forest species). Further, these conditions often involve human influences that are unbounded (e.g., long-term climate change).

Thus, the development of sustainable, long-range plans for the management of our state-owned forestland requires an understanding of the larger landscapes in which these forests exist. While natural resources managers have articulated this need more clearly in recent decades, all of the details of the landscape conditions and processes have yet to be discovered. It is recognized up front that there are data gaps that restrict the ability to comprehensively describe current, and predict future landscape interactions. However, it is the responsibility of natural resource managers to fulfill the legal mandates concerning the wise use of the State's forests. In the words of Yale silviculturalist David Smith, …."condemned to act, on the basis of thoughtful judgment in the absence of total knowledge." Therefore, this effort is a work in progress, and a collaborative effort with the public to fill the information gaps and to better address the mandates associated with the management of the state-owned forestland.

For the most part, the issues raised in this document will be specific to the conditions of the Berkshire Ecoregions. Some issues, however, may be common to multiple ecoregions. For example, improving the conservation of the more than two million acres of private, non-industrial forestland in the state is an issue that crosses ecoregional boundaries. The need for an improved "current use" forest legislation to broaden the enrollment of the current Chapter 61 legislation is one way to address this important issue. This legislation, in combination with other educational and technical assistance tools, is perhaps the most important statewide issue for the protection and sustainable management of the state's forestland.

The continued improvement of forest management on private forestlands, and especially the use of the state's Forest Cutting Practices Act as a tool to assist in this improvement, is another issue that crosses ecoregion boundaries. Recent policy changes by the DSPR (formerly DEM) regarding forest management on private lands will address that issue, although careful monitoring and future adjustments will also be needed. Still, it is generally acknowledged that the best opportunity to implement specific forest structure or habitat goals for Massachusetts' forestland lies with public lands, therefore, the primary focus of this document is to guide the coordination and improved stewardship of the state-owned lands within the Berkshire Ecoregions.

Forest Certification

The concepts of forest sustainability and coordination of the management of state and other forests across ecological regions were recommended during the recent independent audit of the 500,000 acres of state-owned forestland by Scientific Certification Systems as part of the Forest Stewardship Council's Forest ("Green") Certification for these lands. Massachusetts is the first state to put all of its state-managed forestlands up for certification. The audit, which took place in 2002 and early 2003, was launched with the following goals:

- Improve forest management on state lands based on state-of-the-art sustainable forest management principles.
- Improve coordination of forest management among the two land-holding EOEA departments.
- Improve the confidence and understanding of the public about the stewardship of the state's 500,000 acres of forests.
- Take advantage of potential value-added markets for "Green Certified" forest products sold on state lands.
- Educate the public about the role of sustainable forest management in providing local wood products and making Massachusetts more self-sufficient in the use of wood products.
- Encourage other landowners within Massachusetts to complete FSC Forest Certification on their lands to improve forest management across the state.

The FSC (***www.fscoax.org***) is recognized as the most credible provider of third-party certification of the sustainability of forest management practices. FSC does not conduct audits directly, but accredits other organizations to conduct them. In North America, the two FSC-accredited auditors are SmartWood, based in Vermont (***www.smartwood.org***) and Scientific Certification Systems in California (*www.scscertified.com*). SCS was chosen to conduct the Massachusetts audit through a competitive bidding process. SCS assessed Massachusetts' forest management practices against FSC's set of 10 Principles and associated Criteria by which all certified properties must be judged. In addition, FSC establishes regional guidelines in the form of Indicators. The current draft (7.7, June 2002) of the FSC Certification Standard for the Northeast Region of the United States is the FSC standard for Massachusetts.

As auditor for Massachusetts state forests, SCS also developed its own Standard for State Forestland in Massachusetts, modifying the SCS Generic Interim Standard to reflect state forest management in the region, and incorporating relevant components of the FSC Northeast Regional Standards. SCS also used its own Forest Conservation Program (FCP) criteria for the Massachusetts evaluation. The FCP was designed to directly reflect the FSC Principles and Criteria. All Massachusetts public forest operations were evaluated and scored on 18 SCS criteria within three program elements. These ratings were then translated into scores for each of the 10 FSC Principles.

The audit report, completed by a diverse team of nationally-known forest experts, has been completed. This audit included field visits to over 70 sites where forest management practices had occurred or were planned on the properties of the two land-managing departments within the EOEA.

Since the Forest Certification Project began, EOEA has provided over $1.3 million in funding to DCR and DFG to implement requirements of the Certification. So far, DFG has been implementing a comprehensive forest inventory process which is expected to be completed in the next year. DCR has completed the mapping of the forest communities within its 280,000 acres of forests. Both agencies have worked together on a draft proposal to set up a system of Forest Reserves that represent many of the forest ecosystems in the state. DCR has initiated a project with the Natural Heritage and Endangered

Species Program to develop best management practices for forestry operations around the most commonly encountered rare species.

One requirement that emerged from the certification process was the need for the development of forest management plans for state properties set within the context of a landscape-level framework. Thus, EOEA and its land management departments are moving forward with the completion of all ecoregional assessment documents, which will guide forest management plans for the state properties within each ecoregion. It should be noted however, that ecoregional assessment development is an adaptive process, and as new information becomes available, management guidelines and plans may change accordingly.

On May 11th 2004, the State of Massachusetts (MA) received Forest Stewardship Council (FSC) endorsed forest certification for the State lands managed by the principal agencies of the Massachusetts Executive Office of Environmental Affairs (EOEA). The full certification report is available at: ***www.mass.gov/envir/forest/pdf/forestgreencertreport.pdf***

A "**Forest Certification Information Sheet for the Commonwealth of Massachusetts",** with additional information about forest certification on State lands managed by the principal agencies of the Massachusetts Executive Office of Environmental Affairs (EOEA), can be found at: ***www.mass.gov/envir/forest/pdf/forestgreencertificationhandout.pdf***